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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,885	10/12/2004	Timothy H. Daubenspeck	BUR920040144US1	5884

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EXAMINER
GETACHEW, ABIY

ART UNIT	PAPER NUMBER
2841	

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10/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/711,885	DAUBENSPECK ET AL.	
	Examiner	Art Unit	
	Abiy Getachew	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-14 and 21-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7-14 and 21-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/12/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 07/26/2007 has been entered.

Claim Rejections - 35 USC § 102

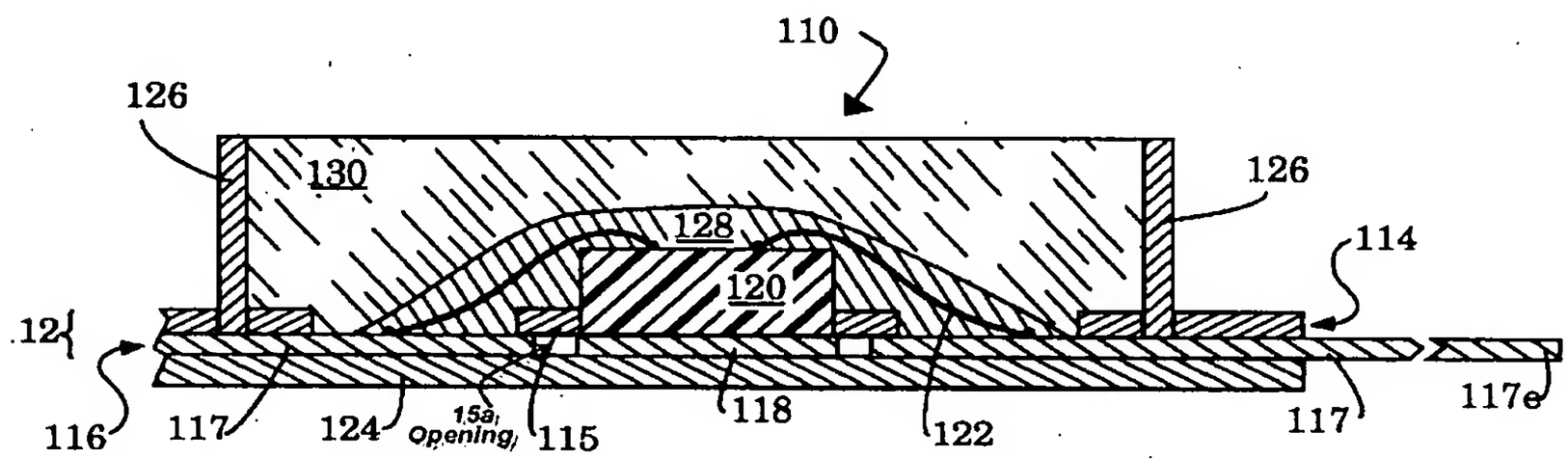
1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5,7 and 22-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Long et al. (5831836).

Regarding claim 1 Long et al. discloses an integrated circuit structure (Figure 1 Element 110) comprising: an insulator layer (Figure 1 Element 114) a pad (Figure 1 Element 118) comprising a conductive material (Figure 1 Element 116) on said insulator layer (Figure 1 Element 114) said pad (Figure 1 Element 118) having a wirebond (Figure 1 Element 122) connection region and a probe pad region; and an inspection mark (Figure 1 Element 115) between said wirebond (Figure 1 Element 122) connection

region and said probe pad region (Figure 1 Element 117), wherein said inspection mark (Figure 1 Element 115) comprises an opening (See figure below i.e. Figure 1 Element 115a) in said insulator layer (Figure 1 Element 114) that is filled with said conductive material (Figure 1 Element 116), wherein said probe pad region is adapted to make physical contact with a probe wherein said probe pad region (Figure 1 Element 117) and said inspection mark (Figure 1 Element 115) are visible from an exterior of said integrated circuit structure(Figure 1 Element 110) and wherein said probe pad region and said inspection mark (Figure 1 Element 115) each comprise a portion of said conductive material (Figure 1 Element 116).



Regarding claim 2 as applied claim 1 above, Long et.al. discloses further comprising a polyimide Layer (Column 3 paragraph 3 lines 21-31) above said conductive material (Figure 1 Element 116), said polyimide having a second opening, wherein said pad (Figure 1 Element 117) is exposed through said second opening. (See Column 3 paragraph 3 lines 21-31]

Regarding claim 3 as applied claim 1 above, Long et.al. Wherein said inspection mark (Figure 1 Element 115) opening is formed above an insulating region (Figure 1 Element 114) of said wiring layer (Figure 1 Element 128).

Regarding claim 4 as applied claim 1 above, Long et al. discloses, wherein said conductor comprises a refractory metal. [See Column 9 paragraph 9 lines 65-76]

Regarding claim 5 as applied claim 1 above Long et al. discloses, wherein said conductor comprises one of aluminum, titanium, and alloys thereof. [Column 5 paragraph 2 lines 7-23]

Regarding claim 7 as applied claim 1 above Long et al. discloses, wherein said inspection mark (Figure 1 Element 115) delineates where probe inspection marks (Figure 1 Element 115) are permitted on said pad (Figure 1 Element 118). (See figure in claim 1)

Regarding claim 22 as applied in claim 1 above Long et al. discloses, further comprising a polyimide layer (Column 3 paragraph 3 lines 21-31) above said conductive material (Figure 1 Element 116), said polyimide having a second opening [See Column 3 paragraph 3 lines 21-31], wherein said pad (Figure 1 Element 117) is exposed through said second opening [See Column 3 paragraph 3 lines 21-31],

Regarding claim 23 as applied in claim 1 above Long et al. discloses, wherein said inspection mark opening (Figure 1 Element 115) is formed above an insulating region of said wiring layer (Figure 1 Element 128).

Regarding claim 24 as applied in claim 1 above Long et al. discloses, where the conductor is comprises a refractory metal. (See the field of the invention, Refractory metals are a class of metals extraordinarily resistant to heat, wear and corrosion)

Regarding claim 25 as applied above in claim 8 Howell et al. discloses, wherein said conductor comprises one of aluminum, tantalum, titanium, and alloys thereof. [Column 5 paragraph 2 lines 7-23]

Claims 8-14 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Howell (6,605,526 B1).

Regarding claim 8 Howell et.al discloses, an integrated circuit structure (See the abstract) comprising a wiring Layer (Figure 2 element 11) below said insulator Layer (Figure 2 element 12) said wiring Layer (Figure 2 element 11) comprising a conductor wire [Column 1 paragraph 5 lines 41-55] an insulator Layer on said wiring Layer (Figure 2 element 11) a pad [column 1 paragraph 3 lines 21-31] comprising a conductive material (Figure 2 element 14) on said insulator Layer (Figure 2 element 12) said pad [column 1 paragraph 3 lines 21-31] having a wirebond (element 31) connection region and a probe pad region [column 1 paragraph 3 lines 21-31] an inspection mark (Figure 2 element 20) between said wirebond (Figure 2 element 31) connection region and said probe pad region [column 1 paragraph 3 lines 21-31], wherein said inspection mark (Figure 2 element 20) comprises an opening in said insulator Layer (Figure 2 element 12) that is filled with said conductive material [Column 1 paragraph 2 lines 14-21] wherein said probe pad region is adapted to make physical contact with a probe wherein said probe pad region [column 1 paragraph 3 lines 21-31] and said inspection mark (Figure 2 element 20) are visible from an exterior of said integrated circuit structure (See the abstract), and wherein said probe pad region [column 1 paragraph 3 lines 21-31] and said inspection mark (Figure 1 Element 115) each comprise a portion

of said conductive material [Column 1 paragraph 2 lines 14-21] and a contact through said insulator Layer (Figure 2 element 12), said contact being adapted to electrically connect said conductor wire in said wiring Layer to said pad [column 1 paragraphs 3 lines 21-31], wherein said contact comprises said conductive material [Column 1 paragraph 2 lines 14-21].

Regarding claim 9 as applied claim 8 above Howell et al. discloses, further comprising a polyimide Layer (Element 14) above said conductive material Figure 2 Element 20), said polyimide (Element 14) having a second opening (See figure 2 Element 30), wherein said pad [column 1 paragraphs 3 lines 21-31], is exposed through said second opening (See figure 2 Element 30).

Regarding claim 10 as applied claim 8 above Howell et al. discloses, wherein said inspection mark (Figure 2 element 20) opening is formed above an insulating region (Figure 2 element 12) of said wiring Layer (Figure 2 element 11).

Regarding claim 11 as applied claim 8 above Howell et al. discloses, wherein said conductor comprises a refractory metal. [See claim 10 of the reference used, i.e. a method of forming a connection to a conductor within an integrated circuit structure, said method comprising: defining a via through an exterior of said integrated circuit structure above a portion of said conductor while retaining a thin insulator on said portion of said conductor and attaching a wirebond material to said portion of said conductor with a heated capillary, by breaking through said thin insulator disposed on said portion of said conductor without a separate etch step]

Regarding claim 12 as applied claim 8 above Howell et al. discloses, wherein said conductor comprises on of aluminum, tantalum, titanium, and alloys thereof. [Column 1 paragraph 3 lines 21-31]

Regarding claim 13 as applied claim 8 above Howell et.al discloses, wherein inspection mark (Figure 2 Element 20) is visible from an exterior of said integrated circuit structure. (See figure 2, it shows a cross-sectional representation of an integrated circuit package of this invention)

Regarding claim 14 as applied claim 8 above Howell et al. discloses, wherein said inspection mark delineates where probe inspection mark (Figure 2 element 20) are permitted on said pad [column 1 paragraphs 3 lines 21-31].

Regarding claim 21 Howell et.al discloses, an integrated circuit structure (See the abstract) comprising a wiring Layer (Figure 2 element 11) below said insulator Layer (Figure 2 element 12) said wiring Layer (Figure 2 element 11) comprising a conductor wire [Column 1 paragraph 5 lines 41-55] an insulator Layer on said wiring Layer (Figure 2 element 11) a pad [column 1 paragraph 3 lines 21-31] comprising a conductive material (Figure 2 element 14) on said insulator Layer (Figure 2 element 12) said pad [column 1 paragraph 3 lines 21-31] having a wirebond (element 31) connection region and a probe pad region [column 1 paragraph 3 lines 21-31] an inspection mark (Figure 2 element 20) between said wirebond (Figure 2 element 31) connection region and said probe pad region [column 1 paragraph 3 lines 21-31], wherein said inspection mark (Figure 2 element 20) comprises an opening in said insulator Layer (Figure 2 element 12) that is filled with said conductive material [Column 1 paragraph 2 lines 14-21]

wherein said probe pad region [column 1 paragraph 3 lines 21-31] is adapted to make physical contact with a probe: wherein said probe pad region [column 1 paragraph 3 lines 21-31] and said inspection mark (Figure 2 element 20) are visible from an exterior of said integrated circuit structure (See the abstract) and wherein said probe pad region and said inspection mark each comprise a portion of said conductive material[Column 1 paragraph 2 lines 14-21] and a contact through said insulator Layer(Figure 2 element 12), said contact being adapted to electrically connect said conductor wire in said wiring Layer to said pad [column 1 paragraphs 3 lines 21-31], wherein said contact comprises said conductive material [Column 1 paragraph 2 lines 14-21].

Related Art

Brench (6,011,299) teaches to minimizing the amount of Electro

Magnetic Interference (EMI) radiation produced by electronic devices, Kim et al. (6,803,822 B2) to a power amplifier including a bias current control circuit capable of effectively reducing a quiescent current of the amplifier to improve the power added efficiency (PAE).

Response to Arguments

Applicant's arguments filed 06/20/2007 have been fully considered but they are not persuasive.

a) Applicant argues that “Howell fails to teach the claimed feature of “a pad comprising a conductive material on said insulator layer, said pad having a wirebond connection region and a probe pad region as defines in independent claims 1,8 and 21”

Examiner disagree, Applicant's attention respectfully directed to Figure 9, i.e. heat, pressure, and spark are exerted upon the sacrificial material 80 during the formation of the wire bond 31 through the capillary 30. As shown in FIG. 9, this heat and pressure break through the sacrificial material 80 to allow a high-quality connection between the uncorroded wiring 11 and the wirebond 31. [Column 1 paragraphs 3 lines 21-31]

b), Applicant argues "Long fails to disclose the claimed feature of a pad ... on said insulator layer, said pad having a wirebond connection region and a probe pad region" as defined in independent claims 1, 8, and 21"

Examiner disagree, Applicant's attention respectfully directed to Figure 1, i.e. when a die attach pad 118 is present, the upper patterned insulative layer 114 includes a surface 115 which "bridges" between the die (die are encapsulated to form the black chips that are then placed on a module) attach pad 118 and the electrical leads 117.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abiy Getachew whose telephone number is (571) 272 6932. The examiner can normally be reached on Monday to Friday 8Am to 4:30Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean A. Reichard can be reached on (571) 272 1984. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Abiy Getachew
Examiner
Art Unit 2841

A.G.
September 18, 2007

Dean A. Reichard 10/1/07

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